INTEGUMENTARY SYSTEM

Revised 13 Sept 2016
Fr. S&M p. 93, Martini 7th, pp154-177, 7th: 158-181, 9th: 145-168, 10th: 151-173

in-tegere (to cover) simple organ (epithelial and CT): includes skin & accessory structures

THREE MAIN LAYERS: (p 151)
- **epidermis**: stratified squamous epithelium (closely packed epithelial cells)
- **dermis**: dense, irregular connective tissue. (corium [leather])
- **hypodermis**: Loose aerolar: subcutaneous (superficial fascia) often adipose, connects dermis to underlying fascia of muscles or periosteum (of shin etc.)

**EPIDERMIS:** four layers, bottom to top: (p 154)
1. **Stratum Germinativum**: mitosis; columnar at basement
2. **Stratum Granulosum**: 3-5 layers thick, granules of keratohyalin increase to outer cells, cells thereby dying
3. **Stratum Lucidum**: Contain eleidin [olive oil] droplets converted to keratin
4. **Stratum Corneum**: 15-30 layers thick (cornu: horn) keratinized cells

Keratin [horn agent] invented by reptiles, protects from invasion, water loss, digestion

No vessels in epidermis, dermis carries vessels and nerves. Asymmetry ½ diff fr ½

**Melanocytes** give color, transfer melanin to stratum germinativum (p 158) ¶ABCDs of melanoma: Border irregular

Blushing, cyanosis caused by dilation or constriction of dermal capillary system

**DERMIS:** dense irregular connective tissue, develop from mesoderm. Diameter >6 mm contains collagenous, elastic, and reticular fibers.

Two indistinct layers: **Papillary layer**: [nipple little] fits close to epidermis, forms fingerprints

**Reticular layer**: collagenous fiber bundles, (See lines of cleavage, p 161) continuous with hypodermis:

**HYPODERMIS** (superficial fascia): loose, aerolar connective tissue, often with fat cells

**HAIR** (p 164) Consists of column of keratinized cells

- **Follicle** [nest little] inner layer of stratum germinativum, outer layer of connective tissue fr dermis
- **Papilla, matrix** formed from dermis at base of follicle contains capillaries, mitosis in matrix
- **medulla** (loose), **cortex** (tightly compressed), **cuticle** very hard grows fr epidermal cells, at bottom of hair follicle
- **arrector pili** smooth muscle causes to stand up, forms goose pimples

**NAIL** (p 169) Nail bed formed by germinativum.

- **matrix** Root, forms the nail, heavily cornified, mostly buried, nail formed fr two outer layers corneum and lucidum
- **eponychium** [upon claw] “cuticle”, fold of dead skin protects proximal end of nail
- **lunula** [moon little] due to thickened distal matrix obscuring vessels underneath
- **hyponychium** “quick” the place you stick splinters...

**GLANDS:** two types: sweat and sebaceous. Also ceruminous ciliary (eye lids); mammary (p 168)

**Sebaceous Glands:** (p 166) holocrine, Sebum oil secreted onto hair shaft keeps fr drying.

Also contains antibacterial organic acids. Production stimulated by sex hormones esp testosterone.

Generally alveolar (= acinar) (sacs) holocrine glands

**Sweat:** (p 167) merocrine gland (secretions do not accumulate) simple tubule, stimulated by sympathetic NS.

- secretions contain NaCl, urea, sulfate, phosphates. **apocrine**, secrete part of cell with thicker and more complex sweat. large glands of axilla, anus, scrotum & labia major

**FUNCTIONS** of skin:
- Protection: water loss, UV, microorganisms: organic acids make acidic
- Temp regulation: Hot?: dilation of capillaries, sweat. Cold?: vice versa
- Excretion: Urea and NaCl. Comp’n varies according to needs of body
- Sensation: temp, touch, pressure, pain.
- Vitamin D formation: 7 dehydrocholesterol + UV makes calciferol

**PATHOLOGIES:**
- Acne puberty provokes xs sebum, Corynebacterium acnes infects
- Warts viral, can be found in groups, plantar warts on sole of foot
- Dermatitis inflammation of the dermis = degranulation of mast cells (PI, etc)
- Psoriasis red brown elevations, silvery scales form on surface.
- Impetigo combined infection of staph and strep
- Moles congenital, usually benign. May incr. in size pigmt, redden, itching
RULE OF NINES for burns: head 9, upper limb 9, trunk front 18, genitalia 1, lower limb 18 each.

HEALING PROCESS OF SKIN:
1) Inflammatory phase, mast cells: histamine, clot formation
2) Migratory phase: fibroblasts and macrophages move into clot, make fibers and clean up
   Basal cells migrate into edge of wound
3) Proliferation phase: epidermal cells move over fiber meshwork
4) Scarring phase: scab shed, scar tissue causes depression in wound.